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Where are the Russians? Are we exporting our technology to them? Where are they in their process of trying to set up fabrication facilities, extraction facilities, et cetera?

MR. NULTON: We have been working with the Russians in technical studies and developments and demonstrations for about three, three and a half years, actually working with them on immobilization as well as other technologies.

We are also working with the Russians to do a demonstration for pit conversion, probably with a different process than we're using, but we are working with them to get a pit conversion demonstration up and running. That will later be expanded so they can handle more pits, larger additional lines to handle their pit conversion.

There is also some discussion going on between ourselves and the French and the Russians regarding design of a facility for MOX fuel fabrication.

SENATOR LEVENTIS: Before we leave that subject, I need to ask Mr. Selby, because

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I passed it up and didn't ask him that. We talked about the ITP, the problems that happened there for whatever reason. I'm certainly not technically capable of understanding it, except that it seemed that large-scale intank precipitation didn't work because of controlling heat or whatever, and we've talked about multiple lines as opposed to one line that runs a large capacity -- several lines that run in a capacity to produce.

Are there any problems that are inherent in several lines in a nearby area versus one line as we have now out in New Mexico?

MR. NULTON: The only thing that -- and these kinds of considerations are taken into account when you design the plant, would be practicality concerns. You don't want to get too much material --

SENATOR LEVENTIS: Too close?

MR. NULTON: -- too close. That is part of the design process is to make sure that you have adequate space and lines and so forth.

SENATOR LEVENTIS: Before I leave that, is there anything else you all would like

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to say about the proposed negotiations that would help us consider these issues?

MR. NULTON: I can't think of anything I would want to add.

SENATOR LEVENTIS: Well, at any point you want to add something, please let me know.

MR. NULTON: Okay.

SENATOR LEVENTIS: Let me shift the focus now to storage because it has a lot of implications for South Carolina, and there's a lot of interest in those things.

Did DOE fail to fulfill a commitment it had made to the Defense Nuclear Facilities Safety Board to build a special storage facility called the APSF facility for plutonium at the Savannah River Site? You may know what I'm talking about.

MR. ANDERSON: Yes, actually, the commitment was to stabilize and put into long-term storage plutonium materials from Savannah River Site, and also would be Rocky Flats, and Hanford at some point.

And a part of that commitment then would -- was the construction and operation of

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the APSF, Actinide Packaging (sic) and Storage Facility, which would have stabilized both the plutonium materials at Savannah River, and we were also looking at the stabilization of materials from other sites at Savannah River, even though the baseline plan was to stabilize those materials at Rocky Flats before shipping to Savannah River or stabilizing at Hanford.

We went into an evaluation process in the December time frame, largely due to the three new missions, and taking a look at this facility, and what we were planning to do with it, to make sure we were going to be designing and constructing an appropriate facility.

SENATOR LEVENTIS: Has anything come from Rocky Flats to Savannah River Site?

MR. ANDERSON: None of the material that was planned for that stabilization process. There are some materials from Rocky Flats that are going through the canyons now, as we speak, are being stabilized in the canyons at Savannah River.

SENATOR LEVENTIS: Are they in the same chemical form in containers that they arrived at at Savannah River Site?

MR. ANDERSON: I just got your question. You had a series of questions there. I'm going to try to answer a couple of those.

SENATOR LEVENTIS: Please.

MR. ANDERSON: The materials that are going to be stored at Savannah River will be received in accordance with a storage standard, which is for long-term storage. And that would be the same standard that is used for the materials that we would stabilize. It would require stabilization material in those containers. And it also sets up requirements for the containers themselves, which are double containers, double type containers.

Materials that are not received in that condition will be processed and stabilized either right now at this point, through the Canyons, or we won't be receiving them in another process if we don't have another disposition path for stabilizing that material.

SENATOR LEVENTIS: The ones that are received in satisfactory condition, how long can they be stored there at Savannah River Site before they have to be removed from the containers and processed or immobilized?

MR. ANDERSON: The ones that are in satisfactory condition --

SENATOR LEVENTIS: When they arrive.

MR. ANDERSON: -- when you say that would meet the standard, the standard is referred to as a 3013 standard, and that's a 50-year standard. Materials that are stabilized according to a 3013 standard and packaged according to that standard are good for at least 50 years.

SENATOR LEVENTIS: I wish I were. I don't feel like I'll make it another 50.

Anything else you'd like to comment on that because I'd like to turn my attention to Mr. Nesbit, if you don't mind.

MR. ANDERSON: The only other comment on the APSF material storage was, the receipt of those materials at Savannah River Site was dependent on the record of decision for the disposition path. So Savannah River was not receiving materials that it did not have a disposition path for.

SENATOR LEVENTIS: And the ones that you received that you judged not to be appropriately stored -- and I know that happens on occasion -- what do you do with those? What's the process there?

MR. ANDERSON: Currently they are run through the canyon processing facilities, which is a chemical processing facility for those materials.

SENATOR LEVENTIS: Let me turn my attention to Mr. Nesbit with Duke Power. We appreciate your coming. I've got a series of questions I'd like to ask you. Do you have those?

MR. NESBIT: I have a sheet here I got a couple of minutes ago with questions there.

SENATOR LEVENTIS: It's got Duke in the middle?

MR. NESBIT: That's the one.

SENATOR LEVENTIS: Okay, how much confidence do you have in the Department of Energy's overall performance in meeting their contract obligations? And of course, we're talking about some specific matters in terms of waste fuels and the like?

(Laughter.)

MR. NESBIT: Well, whenever we enter into a contract with any other person or organization, we always expect them to live up to their contractual obligations, just as we intend to.

SENATOR LEVENTIS: But has that been the record, especially in terms of waste matters to this point in time?

MR. NESBIT: Problems sometimes arise in these types of relationships.

SENATOR LEVENTIS: Are you all -- you all being Duke Power -- presently involved in a legal action against the department in terms of the waste?

MR. NESBIT: Yes, we are.

SENATOR LEVENTIS: Have you all looked into technical failures that the Department has experienced in recent years, such as the ITP, the Pit 9 project in Idaho, and the vitrification pilot plant in Ohio? Do those things concern you?

MR. NESBIT: We're aware that the Department of Energy has a daunting task in front of it throughout the weapons complex. As they've strived to deal with the problems that they face, there's been successes and failures.

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We're also aware of some successes they've had, but with respect to this program, I want to emphasize that our confidence is in the ability of the Duke, Cogema, Stone and Webster consortium, primarily with the knowledge and technology of Cogema to design, build, and operate a successful mixed-oxide fuel fabrication facility. We know they can do it because it's been done.

SENATOR LEVENTIS: If the material is not ready in 2006, will you have incurred costs that you won't be able to recover until you actually use the fuel?

MR. NESBIT: We can adjust our fuel procurement and planning process to have flexibility so that up to approximately a year prior to actually putting the fuel into the reactor, we won't incur costs.

SENATOR LEVENTIS: Has your company been in contact with the Public Service Commission here in South Carolina about the financial implications of the proposed contract with DOE?

MR. NESBIT: I don't know. That's not my department. I personally have been in

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touch with the people in our company who handle that liaison responsibility, but I don't know for a fact whether they have or have not had discussions with the Public Service Commission.

SENATOR LEVENTIS: Would you please let us know when you can the status on that particular issue because that's what most directly affects the folks of South Carolina in terms of any costs or savings they may expect?

MR. NESBIT: Certainly, I'd be glad to.

SENATOR LEVENTIS: What would be the impact if the Department is unable to pay the expected fees involved on Duke?

MR. NESBIT: Well, I'm not sure that -- I guess the question is more like if the Department is not capable of delivering the fuel because we anticipate paying the consortium for the fuel.

We will have a contract. We have a contract and will have a contract with the Duke, Cogema, Stone and Webster consortium. We don't have a contract directly with the Department of Energy in this program, and we don't anticipate having one, so the impact will

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be, if we don't get the fuel, we don't pay for it.

SENATOR LEVENTIS: If you're familiar with this part of the contract, please tell me. If you're not, then I'd like for you to see if you can determine it for us.

Do you feel that your company is contractually bound to pay fuel offset credits to the government?

MR. NESBIT: I think, as I understand the question, we are. The fuel offset credit is what you refer to as the value of the displaced uranium fuel that would have been used had we not loaded mixed-oxide fuel in the reactor, and we will pay for the mixed-oxide fuel, so that is essentially the value of the fuel to us, which --

SENATOR LEVENTIS: The value of uranium has varied substantially in the last several months, years. What if the value of uranium is such that the mixed-oxide fuels are an expensive proposition, vis-a-vis uranium, at that point in time? How will ratepayers of South Carolina be affected by that?

MR. SELBY: Senator, maybe I could

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help you with that.

SENATOR LEVENTIS: Sure.

MR. SELBY: In the formula you may have seen in the contract, the ratepayers of South Carolina are not at a risk with that.

The fuel offset is the offset of the 40-percent MOX fuel that is being used by Duke and Virginia Power in their reactors.

There is a savings if you -- and I do have a chart on it to show the rest of the audience -- F factor is between .5 and .9. That F factor allows for the ratepayers not to have to pay full value for the LEU offset. In other words, they get the MOX fuel at a slightly decreased price over the current LEU fuel at that particular moment in time.

SENATOR LEVENTIS: Since the LEU fuel has decreased in cost recently -- and of course, we don't know what it will do in the future -- but since that's happened, does that make the program more expensive for the Department of Energy now?

MR. SELBY: As LEU fuel prices decrease, and if they do, the offset, yes, will be more expensive for the Department.

However, in any program -- this is a program to dispose of materials -- you're going to have a price. The taxpayers, not the ratepayers, are the people who do pay for both the fabrication of the weapons, and now we unfortunately will be paying for the disposition of the weapons.

There is a, as I said before, only a slight offset that we'd give the ratepayer -- would not allow the ratepayers to pay any higher utility bills if they were using MOX versus LEU.

SENATOR LEVENTIS: This is a little more technical question, but please follow me if you can.

In the material that you've sent, the fuel fabrication facility was, I believe, listed at a cost of 250 million. Was that after you had subtracted the 930 million projected fuel displacement credits from the 1.18 billion?

MR. SELBY: I'm not sure where that number came from. I think our design-only CDR estimates the cost of the MOX fuel fabrication facility, I believe, at around 450, 480.

The fuel offset is still the fuel offset credit. I mean, we're going to be offsetting LEU fuel with MOX fuel. It's going to be a number based on whatever the price uranium is at the particular time.

That full offset will not be, though, available to offset the cost of operation, complete cost of operation of MOX fuel, because part of that offset will go to the -- to assure that the utility ratepayers will pay no more than the price of LEU fuel.

SENATOR LEVENTIS: Than they otherwise would have paid on other costs to the utilities, besides the cost for fuel, any other changes in the facility, administrative costs, et cetera?

MR. SELBY: The changes in the facility are addressed in what we call -- there's a clause H11 in the contract. In that clause, we address that if there's a cost to the utility that is caused specifically by the use of MOX fuel, whether it's a change in equipment, because of the use of MOX fuel, or whether it's increased regulatory oversight or inspection, the Department will pick up those

additional costs.

Now, remember the first two -- the first two phases, the base contract and option 1 are cost reimbursable contracts.

Option 2A, which is the hot startup, is also a cost reimbursable contract, and then never go into the operation of the facility in option 2B.

SENATOR LEVENTIS: What is the likelihood that the NRC may not be as excited about MOX fuel as everyone else? I mean, is there any likelihood that NRC would change the cost structure to Duke in a way that we haven't projected with their requirements? How much are you planning for NRC requirements to cost, which are reimbursable, I take it?

MR. NESBIT: Well, we certainly anticipate -- the licensing costs are reimbursable under the contract. We certainly anticipate the Nuclear Regulatory Commission will be a vigilant oversight organization as they've always been with our reactors. I don't anticipate anything other than that.

With the public interest that's involved with this program, they will be

careful, and I'm sure they'll discharge their responsibilities appropriately.

We certainly anticipate that we'll need some minor modifications at our plants in order to demonstrate that we can safely operate with mixed-oxide fuel, both to our own satisfaction and to the satisfaction of the Nuclear Regulatory Commission.

SENATOR LEVENTIS: Have you all already made that application?

MR. NESBIT: No, we're going -- our current plans are to submit the application for a batch scale utilization of mixed-oxide fuel at the end of 2003. So there's quite a bit of time between now and then.

We're going to use that time to do the detailed plant-specific studies in order to quantify the impacts of using MOX fuel, and identify any required modifications, and to design those modifications.

SENATOR LEVENTIS: We've been going for quite awhile. What I'd like to do is to give Ms. Jeter a rest and to recognize those folks, such as Senator Courson, who have been very patient, Representative Clyburn, to see if

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they have any questions. Then I'd like to take about five minutes to give her a chance to catch up, and then reconvene, and we should be ready to discuss some things from the audience.

There are also issues dealing with the cost factors in the Environmental Impact Statement, and I'd love to give you all a copy so we'll all be reading off the same sheet. I don't want you to have to guess where we are, and try to lead us through some of those steps.

Senator Courson?

SENATOR COURSON: I have just one basic question involving the DOE, I guess.

You mentioned the three and a half years we've had bilateral negotiations between the United States and Russia. Does that include -- are we having similar negotiations with other provinces -- former provinces of the Soviet Union, like Ukraine, Belorussia, and others that possess nuclear capabilities, or is this just isolated to bilateral between the U.S. and Russia?

MR. NULTON: It's just between the U.S. and Russia at this point.

SENATOR COURSON: Follow-up would

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be: Do you anticipate any negotiations between the United States and other former Soviet Union provinces that have nuclear capability and nuclear weapon systems?

MR. NULTON: My understanding is the weapons all came back to Russia. That's why we are negotiating.

SENATOR COURSON: All the weapons are back in Russia?

MR. NULTON: That's our understanding.

SENATOR COURSON: All the weapon systems, nuclear weapon systems formed in the Soviet Union are back now in Russia?

MR. NULTON: That's my understanding. There may be some materials still in these other countries, but I believe the weapon systems are back in Russia. There are no negotiations at this point in time with any other provinces.

SENATOR LEVENTIS: Thank you, Senator Courson.

Representative Clyburn, did you have any questions you'd like to ask?

REPRESENTATIVE CLYBURN: I do not

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have any questions. I just wanted to observe.

SENATOR LEVENTIS: Well, we certainly appreciate your presence and everyone's patience. We appreciate your sitting through this, and we'll get to some of your questions after the break.

It is now, by the clock on the wall, five minutes to eight. I'd like for us to get back together at five minutes after eight.

(A recess transpired.)

SENATOR LEVENTIS: Thank you, I appreciate your patience. We didn't start on time, but that's my fault.

I'd like to pursue a line of questioning now regarding some financials. I wanted to recognize Ethan Brown to go over some of the financial information that was in the EIS, and I think the draft EIS.

Then I'd like to recognize Dr. Makhijani for a couple of questions. We will reassemble our thoughts, and then we'll proceed from there.

And of course, I've invited the gentlemen from DOE or Duke or Cogema to make any comments that they'd like to make if they

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feel it would help the process.

MR. BROWN: Thank you, Senator Leventis, for having me here.

I just want to try to clarify my understanding of some issues as they were addressed tonight and as they have been addressed in public documents that DOE has presented.

I hope you guys have a copy of -- this is the EIS technical summary supporting document. I think they're passing those out right now.

This gives a value of 930 million for the fuel displacement credit. And my question is -- I guess two parts to it -- the first is: What level of certainty would be required to include that as the 930 million dollar offset credit given the price of uranium fluctuating?

And the second: Why is there no mention in the EIS of this fraction F that will allow the reactors to withhold up to 465 million dollars from the government, thereby increasing the total cost of the MOX program by that amount?

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MR. SELBY: Okay. The first point is, the contract has just been recently, as you know, negotiated. March 22nd is when we completed the negotiation.

There will be a revised cost report that comes out with the final EIS that will reflect the negotiated agreements.

MR. BROWN: If I were to take the .5, then I would be correct in adding to the 250-million-dollar net lifecycle cost, 465 million dollars?

MR. SELBY: As I said before, the .5 to .9 are the ranges. I can't tell you the exact number.

MR. BROWN: Just go with half?

MR. SELBY: Yeah.

MR. BROWN: So I would add that amount to the cost of the fuel fabrication?

MR. SELBY: The .5 would be -- exactly, the credit would be increased.

MR. BROWN: Okay. My second question relates to the decision in the EIS literature to exclude the payments of annual fees, even though those in the contract are presented in the very same equation that the

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fuel displacement credit is discussed, and it reminded me a little bit of folks who run into problems on Wall Street, where they go ahead and present to the SEC their accounts receivable as certain but discount away their accounts payable. I'm wondering what the decision was to include a potential credit to the government but exclude a potential cost when they're both contained in the exact same payment equation. What was the reasoning behind making the difference between the two?

MR. SELBY: I guess I'm not sure exactly your question. Would you repeat it?

MR. BROWN: Sure.

SENATOR LEVENTIS: Do you have the equation in front of you?

MR. NESBIT: Bob, I think he's talking about the 1996 cost report.

MR. BROWN: I'm trying to reconcile that with the contract.

MR. NESBIT: The 1999 contract.

MR. BROWN: Right, the payment formula has included it in this annual fee. I'm wondering why that was excluded from these cost estimates.

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MR. SELBY: Again, I'm sure those cost estimates were prepared prior to the contract being negotiated.

Let me tell you about -- so there's no misconception -- this cost containment formula starts, as you're probably aware, at option 2B, when we start getting the full operation of the MOX fuel fabrication facility.

The fabrication costs would include whatever the operating costs are. These are the operational costs, with the LEU as being revenue, being the offset minus the percentage of the formula, either the .5 to .9 that I talked to you about, so that was what we negotiated. I can't speak to the cost.

MR. BROWN: Okay, but I guess just what I want to make clear is, in the final EIS, then this annual fee and its value would be included in the total cost.

MR. SELBY: The annual fee actually hasn't been negotiated yet.

MR. BROWN: But it will be included at --

MR. SELBY: Some number for that annual fee is what you're asking?

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MR. BROWN: Would it be fair to say that the estimated, what, 300 million that the Department has put out in two separate documents is an accurate estimate of how much that annual fee will be over the lifecycle?

MR. SELBY: What our estimate has been, at least in terms of what we did for the negotiations was, that we estimated that the cost of operating the MOX fuel fabrication facility would be somewhere between 55 and 60 million dollars a year.

MR. BROWN: I think I'm speaking about the fee as opposed to the cost. I know in the contract they draw a distinction between the two, and they estimate in two documents, one, this '96 technical summary, and two, the one coming out of Oakridge, I think, in April of '97, that says the value of the potential annual fee will be 300 million dollars, and that's included nowhere in the official cost estimates. I'd just like to know whether that's going to be anywhere.

MR. SELBY: I don't recognize that number.

MR. BROWN: Okay.

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MR. SELBY: What we plan, the cap on fee, as far as the Department is concerned, is 10 percent. At 50 to 55 million dollars a year, we're talking maybe 5 million dollars, maximum 5.5 million dollars.

DR. MAKHIJANI: I think there's a miscommunication going on. If I might try to clarify. I think Ethan is asking about the fee to the utilities, this annual fee in the cost formula regarding fuel reimbursement.

MR. SELBY: Oh, the production --

DR. MAKHIJANI: The annual fee to the utilities you would pay them for the MOX irradiation services, how much is that, and the fact that it's not in the EIS. I think you're misunderstanding.

MR. SELBY: I'm sorry. Yes, pardon me. I am off base on that.

What we've done is, we've done a sample calculation. I chose the mid-point of F equals 0.7. You can choose 0.5 to figure out what it is that we're talking about.

On an annual basis, the reload of 40-percent MOX core will offset -- a total reload will cost about 42 million. About

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40 percent of that then would be the LEU -- the MOX fuel. And if you use the -- I use, again, the .7 for my calculation, I come out with about 5 million dollars a plant, out of the 42 million that would be spent on a core as a reduction in cost for the utility.

Now, if you take that on the total cost of nuclear operation, which includes O&M costs and other costs like depreciation and taxes, et cetera, the actual savings in nuclear generation, I calculated, is about 18 percent, that five 104 -- 5.04 million or about 2.1 in overall savings to a utility for using MOX fuel. Again, I used it based on a 42-million-dollar reload.

The numbers I used to calculate the O&M cost were about 14 percent for O&M, 15 percent for other costs, 6 percent for nuclear fuel.

And if I want to put in the transmission costs, which are, again, 65-percent of the total cost for the consumer to receive electricity, in terms of seven mills per kilowatt, seven cents per kilowatt hour, I come up with reduction on the overall plan of

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only about .8 percent. If you take the total value of what it takes to produce electricity and transmit it to the --

MR. BROWN: I appreciate your thoroughness, but I think -- I had a much more simple question, and that is: The Department knew in 1996 that this annual fee may be required, and the annual fee they estimated at 300 million dollars to pay out to the reactors to participate in this program.

MR. SELBY: Uh-huh.

MR. BROWN: I want to know why they didn't include that in the official cost estimate, and why they decided to include the 930-million-dollar fuel offset credit.

MR. NULTON: I think, first of all, we need to -- the cost estimate we did back in the past was based on our best guess at how this fuel was going to work at that time.

Now we have actual numbers and contracts in place. I think we ought to focus on what the current arrangement is because this is more accurate.

Can you say, Bob, what the maximum fee to the utility would be a year, based on --

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MR. SELBY: Well, this is, again, a 5-million-dollar offset based on a 42-million-dollar core replacement. That five million, though, then has to be compared to what is the total overall -- I mean, if we're concerned about utilities having a windfall, I mean, you've got to really compare that 40 --

MR. NULTON: Is the number anywhere near 3 hundred million?

MR. SELBY: The number at -- let's see. It could be about -- if you take it over the life of the 13 years.

MR. BROWN: So can I just then recalculate the cost -- or in this EIS to update it to the level of knowledge and understanding we have now? If I take .5, which is just saying we'll split the factor in the middle, right, then I get --

MR. SELBY: No. The factor runs between .5 and .9.

MR. BROWN: Okay. Fine.

MR. SELBY: You're taking the worst case, and that's okay.

MR. BROWN: Well, I didn't know the value of that.

MR. SELBY: No, no, no.
MR. BROWN: I'm just saying 495. I'm going to add that to the 250, right? Then I'm going to go ahead and add the 300 million. So that's a much more expensive program than initially estimated. That's like four times the cost of the immobilization program.
MR. NESBIT: You're including an incentive fee of 300 million, plus a fuel discount. That's double counting.
MR. SELBY: You can't do that because the fuel discount is their incentive.
MR. BROWN: Okay. That's not how it's laid out in this. So the total incentive payment or annual fee to the participating reactors would be something like 300?
MR. SELBY: No. On an annual basis, on an annual basis --
MR. BROWN: Over the course --
MR. SELBY: -- per core load, it's about 5 million dollars.
MR. BROWN: Okay.
MR. SELBY: Per core load.
MR. NULTON: Which is every 18 months.

understanding.
MR. NULTON: -- for the whole 10 to 15 years, not per year.
SENATOR LEVENTIS: Right.
MR. BROWN: And that's what I just wanted added --
MR. NULTON: Big difference.
MR. BROWN: So we're in agreement. That's fine. So it's going to be roughly double over the lifecycle of the program is my understanding, based on what you said.
MR. SELBY: I --
MR. BROWN: For the actual reactor component you have 290 million; and I'm saying, given the fact you'll be paying out over the lifecycle 300 million in fees that weren't included in this estimate, given that consideration, it's going to be roughly double.
MR. SELBY: I don't think I would agree. I think that if we -- let's walk through the formula. We know that we're going to spend 50 million dollars to 60 million dollars a year for the MOX fuel fabrication facility. That includes the fee for the consortium, 60 million a year.

MR. SELBY: But on average, it's going to be three to four --
MR. BROWN: So it would be fair to say then it's going to be approximately double the cost of what was in the EIS estimate, if you take that --
MR. SELBY: I'm not -- I've got to look at the EIS. I'm not --
SENATOR LEVENTIS: I think what would be reasonable to do would be to ask you to take a look at that and provide for us, if you would, when you can, what you think lifecycle cost would be, vis-a-vis, this '96 --
MR. SELBY: Absolutely. It's going to be revised in issue with the EIS. It is --
SENATOR LEVENTIS: When -- do you have any guesses?
MR. NULTON: Yes, September.
SENATOR LEVENTIS: No, not when the EIS is --
MR. NULTON: I think what Mr. Selby was saying was, it isn't 300 million -- you said it's possible it could be 300 million, but that would be over the life of the program --
MR. BROWN: That was my

We know we have an LEU offset. We produced 58 -- as you know, the plant runs at -- I think it's about 58,000 -- let's get the numbers here, 58 metric tons per year.
With that, you can do the calculations using either F of somewhere between .5 and .9. You can choose .5, since that's the worst case. You know the LEU offset value. It's 40 percent of the total core load, which is approximately 42 million dollars.
So you know what the utility would get. You know what the MOX fuel fabrication facility costs are. You can use the 10 percent -- less than 10 percent for the annual fee MOX fuel, which adds up to a 60-million-dollar MOX fuel fabrication cost.
So what we're looking at for a maximum liability to the government -- let's say the uranium prices are at -- again, I used an F factor. I'll give you an example of .5. We'll end up paying on an annual basis about 34 million dollars over a 15-year life.
MR. BROWN: Can I ask one other question?
SENATOR LEVENTIS: Please.

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MR. BROWN: I just wanted to clarify a discussion that we had about the cost of the plutonium polishing addition.

It was suggested there was going to be no increase in schedule and no increase in cost. I think it was said it was going to be a wash.

I'm just having trouble reconciling that with a number of statements in the different DOE documents that listed anywhere from costing an additional 50 million to costing up to 250 million.

What am I not seeing in the documents that you're seeing?

SENATOR LEVENTIS: What documents are you taking about, Ethan?

MR. BROWN: The technical summary report for surplus weapons usable plutonium, October '96; then the 1997 study that Oakridge did.

I mean, does that pretty much directly suggest there's going to be an additional cost and a schedule increase?

MR. SELBY: I think, first of all, we don't believe that there will be a schedule

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increase. I think we looked at that when we were analyzing the schedule that was proposed by Duke, Cogema, Stone and Webster for the project.

What does happen is, we reduce the length of the time of the fuel qualification program, as Dave Nulton stated, by removing the gallium and other potential impurities in the weapons-grade material.

So I think it -- although we haven't had a design done as yet of the polishing facility -- there's no indication that the design will require a longer schedule in terms of construction, nor that the cost will be significantly increased from the estimate.

MR. BROWN: I just want to read then for the record this DOE document says, The sunk cost of the -- the dry processing would be, approximately 50 million, and then an additional 50 million for establishing the wet polishing line, and a two-year increase in schedule. It says, Articles in trade press suggested the cost be as much as 250 million or higher. And that's Dr. Reed and Dr. Miller, April '97, Oakridge.

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MR. NULTON: I don't know where the article -- the number of the trade press came from. I don't think it was one of our numbers.

MR. BROWN: That's fine. Just go with 100 million.

MR. NULTON: My point earlier, my comment was, when you look at the dry gallium removal process, it involved a substantial amount of R&D work and time to do that. It involved a substantial amount of fuel testing in the ATR reactor. We no longer have to do that, so there's a lot of cost savings there.

We also would have had to produce a larger number of lead test assemblies, which we now don't have to do.

So when you look at the savings and lead test assemblies, which each one of them has a fairly significant cost, the fact we don't have to do the R&D, and we don't have to do the test and ATR, there's an enormous cost savings there.

That's going to be offset by the fact that we do have to design and build this AVS acqueous polishing, so I'm saying they offset each other somewhat.

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MR. BROWN: Can you just explain, though, how the sunk costs becomes a wash?

MR. NULTON: The sunk costs are there. We can't go back and cover those. We hadn't sunk very much that would have been a -- we never did any work on TIGR. We never got that up and started. So we didn't spend any money on that. We didn't design the NPDCF, because we didn't design the facility yet. So I'm saying those costs were never expended.

MR. BROWN: So there was no 50 million --

MR. NULTON: No.

SENATOR LEVENTIS: Dr. Makhijani, do you want to proceed?

DR. MAKHIJANI: I had some questions about the Russian or clarification about some parts of the Russian program.

Mr. Nulton, you said that you're not aware of a Russian reprocessing program. So far as I'm aware, there's a reprocessing plant, a military plant, operating approximately as of the 26th.

MR. NULTON: I'm not aware of a civilian reactor --

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DR. MAKHIJANI: There is a military plant, Thomas 7, and there is a civilian plant, RT1 at Mayak in Southern Europe. And that is the reprocessing plant, in fact, where not only Russian fuel is reprocessed, but a fair amount of foreign fuel has been reprocessed. All of the foreign contracts are in some jeopardy because of cost consideration, but they're still negotiating with the Bulgarians, for instance, for taking their spent fuel, new process in RT1.

RT1 has long been their commercial reprocessing plant. Isn't that right?

MR. NULTON: I don't know. I was not aware of it.

DR. MAKHIJANI: Well, I'm a little bit surprised because one of the greatest security concerns that has been widely expressed by us and by many people in the official capacity has been the 30-odd tons of commercial plutonium that has already been separated from Russian commercial plants and foreign commercial plants -- but I think it's primarily from Russian plants -- that are stored there in separated form, plutonium

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dioxide form, in 12,000-some bins in Mayak.

I believe the Department has had some security concerns around this and that there is an operating reprocessing program.

One of the reasons this whole agreement is a source of concern to many of us is that the Department has gone back from the original idea that in Russia and the United States it will be a once-through program, and not allow reprocessing.

But now, as I understand it, the Russians have a reprocessing program. They've got a backlog of spent fuel to reprocess. So does it make any difference that MOX fuel would be reprocessed 10 years from now as opposed to now or ten years from 2005? Will it stop their reprocessing program in some way or upset it?

MR. NULTON: I think they clearly, at some point in the future, would like to reprocess this material, and the agreement that is being negotiated is that they won't initiate that until the disposition activity is completed.

I think the thought there is that the weapons-grade material will at least be

Page

degraded to a reactor-grade form at that point.

DR. MAKHIJANI: Well, degraded reactor fuel can be made into weapons. It's my understanding -- I don't know if it quite confirms with your understanding -- that the main threat from Russian plutonium is not that the Russians are going to use their plutonium again in weapons. The main threat is that it will wind up in black markets and be sold to third countries or terrorist groups and so on.

Isn't that the main problem about Russian plutonium?

MR. NULTON: That is a concern about Russian plutonium.

DR. MAKHIJANI: It's not that both the U.S. and Russia have plenty of surplus plutonium, so they wouldn't use degraded plutonium in their weapons, but degraded plutonium can be used to make weapons.

So my problem is that the -- my concern that we're having, and I'm wondering why the Department doesn't share it is, the Russian reprocessing program will be going on as it is now, and is not affected in any significant way, so far as nonproliferation

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issues are concerned, by delaying the reprocessing of MOX fuel. It just simply seems like some kind of paper satisfaction for the American side at having given away a very big negotiating point to allow the Russians to reprocess their MOX fuel. It doesn't accomplish a disposition purpose, right?

MR. NULTON: It delays it. There is some net destruction of plutonium by using it in reactors. And it does degrade it to reactor-grade form, which is much less desirable for weapons, so there is that gain.

SENATOR LEVENTIS: And some of the concerns that I think we ought to acknowledge that -- some of the concerns you've shared, while they're very valid, are not DOE policy issues because they're being negotiated and dealt with at a different level than that.

I understand completely what you're saying, but these gentlemen may not have a hand on that particular throttle. I think that if you can reflect on it, it would help us, but I know there's some that you can't reflect on.

DR. MAKHIJANI: I have some questions about the regulatory system in Russia

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and how their relicensing or licensing activities would work.

What's the condition of their Nuclear Regulatory Commission in terms of their authority over their power plants, their authority to require changes, their budgetary situation?

MR. NULTON: Well, I'm not sure, and I don't think we have the right people here to answer that. I can say that GAN, which is their Nuclear Regulatory Agency, will regulate the facilities that use this MOX fuel.

Our NRC works with their GAN to try to help in their regulatory process, but I don't know the details. We can answer those questions. We just don't have the right people here this evening to do that.

MR. STEVENSON: The funding of GAN, in order to perform their regulatory functions, is also part of the subject of negotiations, because we have to make sure that what is negotiated is a complete program, and therefore the regulation of the Russian reactors to disposition of weapons-grade plutonium is part of that negotiation.

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DR. MAKHIJANI: Thank you very much for that clarification because we had heard their regulatory commission, which is GAN, is sometimes not able to pay their electricity bills, much less regulate anybody, so it has been a concern, so thank you very much for clarifying that.

Their reactors, as I understand, are not -- were their reactors designed for use of MOX fuel? Are you assuming that they would use 40-percent MOX fuel also?

MR. NULTON: No, they're not going to use 40 percent. They will use much less than that.

Again, I don't know that we have the right people here to get into the details of their reactor designs, but we do have our laboratory experts working with theirs to determine how much they can burn safely, what modifications would be required for those reactors and so forth.

SENATOR LEVENTIS: How many reactors do you believe will be involved in their MOX process?

MR. NULTON: Seven.

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SENATOR LEVENTIS: Seven?

MR. NULTON: Yes.

SENATOR LEVENTIS: They're going to expend all of their fuel using -- I mean, they're going to MOX all of their fuel instead of stabilizing any of it?

MR. NULTON: They're going to MOX almost all of their weapons-grade material. That's correct. They have some chemical solutions and waste materials that they will probably immobilize. That's part of what we're negotiating in this contract, or in this bilateral agreement.

SENATOR LEVENTIS: Then it must not be simple math because we have six plants that are going to use MOX fuel for 10 to 12 years and do away with 30-some-plus tons, and they have seven that are going to use it for a similar period of time and do away with a lot more.

MR. NULTON: Except we need some additional capacity in Russia because they're going to put less plutonium into their reactors.

SENATOR LEVENTIS: Right.

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MR. NULTON: So we need to identify additional reactor capacity.

SENATOR LEVENTIS: Which hasn't been done yet.

MR. NULTON: Right. That would have to come from European reactors or Ukraine reactors, or we also have a program that we're working with the Canadians, where they might possibly burn some of the Russian plutonium. So that would provide the additional reactor capacity if the Russians don't.

DR. MAKHIJANI: Finally, I really have been very, very concerned about the liability questions. It is my understanding that Russia did not consider the use of MOX in light-water reactors as part of their program until the disposition question came up, and it was brought up by the American side. Is that right?

MR. NULTON: I don't know. I don't believe their reactors were designed specifically for MOX. I'm not sure that means that they can't burn some amount of MOX in those reactors.

DR. MAKHIJANI: No, no, it's my

understanding that they never considered it because they didn't consider it a desirable thing to do with plutonium, as to use it in light-water reactors.

MR. NULTON: I think that initially they did not want to burn it in their reactors. I don't think that we talked them into it. I think this was part of the joint negotiations that we had with them.

What they wanted to do, as I mentioned, was store it and build more breeder reactors. What they wanted was aid from the G7 countries to build a series of breeder reactors. We said we would not do that so that led us logically to the use of their existing reactors.

I don't think it was a matter of talking them into it. It's just we worked out the joint agreement.

SENATOR LEVENTIS: At the bilateral negotiations and discussions, are there high level DOE officials and GAN officials as well as the vice-president and the president? Who's doing the negotiations?

MR. NULTON: The negotiations are

being done by the State Department and the Department of Energy.

We have a team of negotiators made up of individuals from the State Department and Laura Holgate, who is the Director of the Office of Materials Disposition, member of that, Deputy Negotiator on the U.S. side, and on the Russian side we're negotiating with them now.

DR. MAKHIJANI: Thank you very much.

SENATOR LEVENTIS: Gentlemen, thank you. You've been very patient, and I'm going to recognize some folks from the audience now and hope that we have time to recognize as many as possible. I'd ask you to identify yourself for Ms. Jeter, and please come forward. Make sure that red light in that little machine is on there.

Certainly, if you'd like to make a statement, that's fine. I'd like for you to ask questions. In consideration of the other folks who have been so patient, please try to be prompt.

Actually, I was going to recognize Ms. Thomas first.

SPEAKER: I'm sorry.

SENATOR LEVENTIS: It's not McDonald's. I'm sorry.

SPEAKER: Is there a list?

SENATOR LEVENTIS: Ruth Thomas with Environmentalists, Inc., would like to make a statement and ask some questions.

MS. THOMAS: I had some --

SENATOR LEVENTIS: Is the red light on, Ms. Thomas?

MS. THOMAS: Yes, but my voice is not doing too well.

SENATOR LEVENTIS: You might have to lean down a little bit so we can all hear you.

MS. THOMAS: I'm getting smaller. I've been getting smaller anyway as I get older.

We agree with the Department of Energy that plutonium must be kept from terrorists. However, the draft Environmental Impact Statement does not adequately explain how the proposed options could accomplish this.

And Mr. Makhijani, he got in ahead of me the questions about how -- if you go ahead and irradiate mixed-oxide fuel at

commercial reactors, this is only a temporary approach, and a ban on reprocessing could easily be changed, not just in Russia. It could be changed in this country.

We've addressed that, but I did want to bring it up to you because it's one of our concerns. And incidentally, Environmentalist, Incorporated has been involved in these issues for 27 years, and we have raised questions and tried to bring about awareness and to get answers to our questions.

The draft EIS appears to address the security and health problems associated with plutonium, but it's very difficult to find answers to questions due to the -- there's not much footnoting, and the connections are not made between specific references and places in the text where there are statements and conclusions.

And you have to go from one part to the other, and back and forth, and look at charts. I'm hoping this will be corrected in the final.

Some of the options suggested appear to be in conflict with what is known about